Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

1-31. (Canceled).

32. (New) A nuclear quadrupole resonance apparatus for detecting a substance containing nuclear quadrupole nuclei, comprising:

a pulse sequence generator adapted to generate a combination of two or more steady state free precession pulse sequences, the steady state free precession pulse sequences having phases that alternate in a pattern to excite nuclear quadrupole nuclei in a frequency bandwidth which exceeds the frequency bandwidth covered by each of the steady state free precession pulse sequences individually to thereby minimize intensity variations caused by unknown temperature of the substance, wherein there are at least two different phases alternated in at least one of the pulse sequences;

a detector to detect a nuclear quadrupole resonance signal generated from the substance under conditions of unknown temperature of the substance in response to the combination of steady state free precession pulse sequences, the detector being arranged to add the spectral components of the nuclear quadrupole resonance signals obtained from each of the steady state free precession pulse sequences of said combination; and

a phase shifter to periodically shift the phases of the pulses of said steady state free precession pulse sequences according to a predetermined order.

33. (New) An apparatus as claimed in claim 32, wherein at least one of said steady state free precession pulse sequences contains a preparatory pulse.

34. (New) An apparatus as claimed in claim 32, wherein none of said steady state free precession pulse sequences contains a preparatory pulse.

35. (New) An apparatus as claimed in claim 32, wherein the nuclear quadrupole resonance frequency of the sample exceeds the frequency bandwidth of each of the steady state free precession pulse sequences.

36. (New) A method of nuclear quadrupole resonance for detecting a substance containing nuclear quadrupole nuclei, the method comprising:

generating a combination of steady state free precession pulse sequences, the combination having phases of the carrier frequency of the pulses that are chosen from a predetermined set of phases distributed within the interval from 0 to 2pi radian, each pulse sequence differing from other pulse sequences by either (i) the number of different phases chosen from the set, or (ii) the order of the phases inside the pulse sequence; wherein there at least two different phases alternated in at least one of the pulse sequences such that intensity variations caused by unknown temperature of the substance are minimized;

irradiating the sample with the combination of steady state free precession pulse sequences;

detecting a nuclear quadrupole resonance signal from the substance under conditions of unknown temperature of the substance in response to the combination of steady state free precession pulse sequences; and

adding the spectral components of the nuclear quadrupole resonance signals obtained from each of the steady state free precession pulse sequences of the combination.

37. (New) A method as claimed in claim 35, comprising generating a combination of steady state free precession pulse sequences wherein at least one of said steady state free precession pulse sequences has a preparatory pulse.

38. (New) A method as claimed in claim 35, wherein a predetermined frequency of the steady state free precession pulse sequence is near to one of the nuclear quadrupole resonance frequencies of the substance to be detected.

39. (New) A method as claimed in claim 35, comprising generating one or more combinations of steady state free precession pulse sequences without a preparatory pulse.

40. (New) A method as claimed in claim 35, wherein the nuclear quadrupole resonance frequency of the sample exceeds the frequency bandwidth of each of the steady state free precession pulse sequences.

41. (New) A method of nuclear quadrupole resonance for detecting a substance containing nuclear quadrupole nuclei, the method comprising:

minimizing intensity variations caused by unknown temperature of the substance by generating a combination of steady state free precession pulse sequences, within which the phases of the pulses alternate in a pattern to excite nuclear quadrupole nuclei in a frequency bandwidth which exceeds the frequency bandwidth covered by each of the steady state free precession pulse sequences individually, wherein there are at least two different phases alternated in at least one of the steady state free precession pulse sequences;

irradiating the substance with the combination of steady state free precession pulse sequences;

detecting a nuclear quadrupole resonance signal generated from the substance under conditions of unknown temperature of the substance in response to the combination of steady state free precession pulse sequences; and

adding the spectral components of the nuclear quadrupole resonance signals obtained from each of the steady state free precession pulse sequences of the combination.

42. (New) A method as claimed in claim 39, comprising generating a combination of steady state free precession pulse sequences wherein at least one of said steady state free precession sequences has a preparatory pulse.

43. (New) A method as claimed in claim 39, wherein a predetermined frequency of the steady state free precession pulse sequence is near to one of the nuclear quadrupole resonance frequencies of the substance to be detected.

44. (New) A method as claimed in claim 39, comprising generating one or more combinations of steady state free precession pulse sequences without a preparatory pulse.

45. (New) A nuclear quadrupole resonance apparatus for detecting a substance containing nuclear quadrupole nuclei, comprising:

pulse sequence generating means for generating a combination of two or more steady state free precession pulse sequences, in which the phases of the steady state free precession pulse sequences alternate in a pattern to excite nuclear quadrupole nuclei in a frequency bandwidth which exceeds the frequency bandwidth covered by each of the steady state free precession pulse sequences individually to thereby minimize intensity variations caused by unknown temperature of the substance, wherein there are at least two different phases alternated in at least one of the steady state free precession pulse sequences;

detector means for detecting a nuclear quadrupole resonance signal generated from the substance under conditions of unknown temperature of the substance in response to the combination of steady state free precession pulse sequences, the detector means being arranged to add the spectral components of the nuclear quadrupole resonance signals obtained from each of the steady state free precession pulse sequences of said combination; and

phase shifting means for periodically shifting the phases of the pulses of said steady state free precession pulse sequences according to a predetermined order.

46. (New) A nuclear quadrupole resonance apparatus for detecting a substance containing nuclear quadrupole nuclei, comprising:

means for generating a combination of two or more steady state free precession pulse sequences, in which the phases of the steady state free precession pulse sequences alternate in a pattern to excite nuclear quadrupole nuclei in a frequency bandwidth which exceeds the frequency bandwidth covered by each of the steady state free precession pulse sequences individually to thereby minimize intensity variations caused by unknown temperature of the

substance, wherein there are at least two different phases alternated in at least one of the steady state free precession pulse sequences;

detector means for detecting a nuclear quadrupole resonance signal generated from the substance under conditions of unknown temperature of the substance in response to the combination of steady state free precession pulse sequences, the detector means being arranged to add the spectral components of the nuclear quadrupole resonance signals obtained from each of the steady state free precession pulse sequences of the combination; and

phase shifting means for periodically shifting the phases of the pulses of said steady state free precession pulse sequences according to a predetermined order.